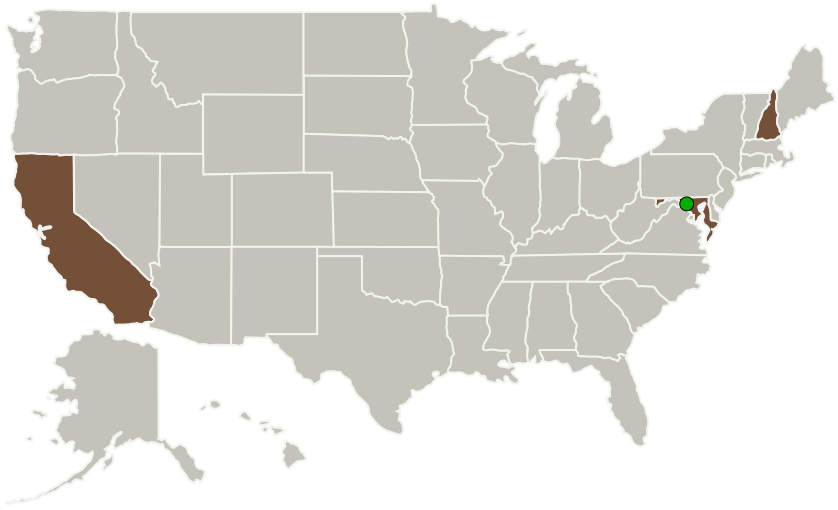
A Coupled System for Predicting SPE Fluxes, Phase I

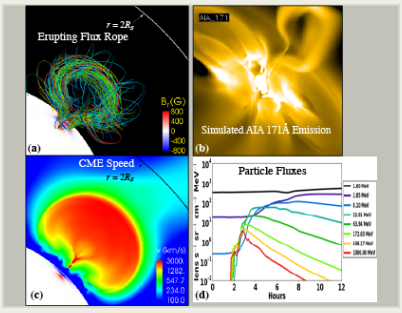
Completed Technology Project (2015 - 2016)

Project Introduction

Solar Particle Events (SPEs) represent a major hazard for extravehicular maneuvers by astronauts in Earth orbit, and for eventual manned interplanetary space travel. They can also harm aircraft avionics, communication and navigation. We propose to develop a system to aid forecasters in the prediction of such events, and in the identification/lengthening of "all clear" time periods when there is a low probability of such events occurring. The system leverages three recently developed technologies: physics-based models of the solar corona and inner heliosphere, robust CME modeling techniques, and empirical/physics-based assessments of energetic particle fluxes using the Earth-Moon-Mars Radiation Environment Module (EMMREM, University of New Hampshire). When completed, the proposed SPE Threat Assessment Tool, or STAT, will represent a significant step forward in our ability to assess the possible impact of SPE events.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
Predictive Science, Inc.	Lead Organization	Industry	San Diego, California
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland
University of New Hampshire-Main Campus	Supporting Organization	Academia	Durham, New Hampshire

Primary U.S. Work Locations	
California	Maryland
New Hampshire	

Project Transitions

June 2015: Project Start

June 2016: Closed out

Closeout Summary: A Coupled System for Predicting SPE Fluxes, Phase I Project Image

Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/138612)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Predictive Science, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Jonathan Linker

Co-Investigator:

Jon Linker

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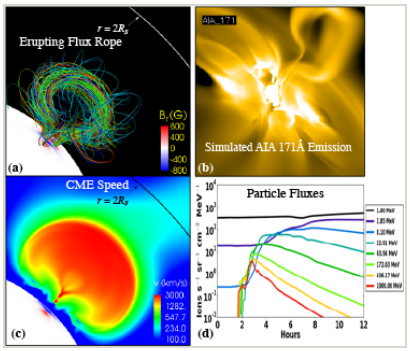
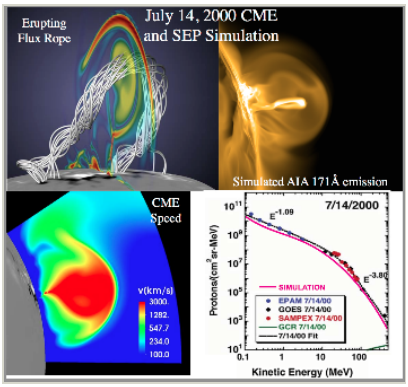
Images



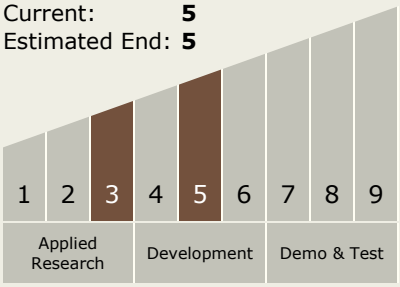
Briefing Chart Image
A Coupled System for Predicting SPE Fluxes, Phase I
(https://techport.nasa.gov/image/128873)



Final Summary Chart Image
A Coupled System for Predicting SPE Fluxes, Phase I Project Image
(https://techport.nasa.gov/image/127538)

Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.5 Radiation
    - TX06.5.4 Space Weather Prediction

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System